Port of Terrebonne - West Bank

Exhibit 29 – Cultural Resources Investigation

Phase I Cultural Resources Investigation

of the Terrebonne Port Commission LED Site Certification Project, Houma, Terrebonne Parish, Louisiana

Prepared for:

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Prepared by:

TRC
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Phase I Cultural Resources Investigation of the Terrebonne Port Commission LED Site Certification Project in Houma, Terrebonne Parish, Louisiana

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Abstract

This report describes the results of the Phase I cultural resources investigation of the proposed Terrebonne Port Commission LED Site Certification Project in Houma, Terrebonne Parish, Louisiana. TRC Environmental Corporation, Inc. (TRC), on behalf of Delta Coast Consultants, LLC, conducted this archeological inventory in March of 2023. In total, approximately 13.8 hectares (34 acres) were systematically assessed for cultural resources as part of this Phase I cultural resource survey.

The Port of Terrebonne is seeking to obtainin an Industrial Site Certification from Louisiana Economic Development (LED) to develop a property along Rome Woodard Court. As part of the application process for certification, the Port is completing several studies regarding utilities availability, soil conditions, and environmental conditions. As part of the latter, a Phase I cultural resources survey was required.

This investigation was designed to identify and evaluate all cultural resources situated within the proposed Project footprint. Such archeological resources may include archeological sites, non-site cultural resources loci, and cemeteries. This investigation followed the guidelines and procedures outlined in Louisiana's Comprehensive Archaeological Plan (Girard et al. 2022); the Louisiana Division of Archaeology's Field and Report Standards (Division of Archaeology, Office of Cultural Development, Louisiana Department of Culture, Recreation & Tourism); the National Historic Preservation Act of 1966 (as amended); the Archaeological and Historic Preservation Act of 1974; Title 36 of the Code of Federal Regulations (CFR) (Parts 60-66 and 800); and, Archeology and Historic Preservation: The Secretary of the Interior's Standards and Guidelines.

As a result of this investigation, 59 shovel tests were excavated at 50-meter (m; 164.0-foot [ft]) intervals along 10 survey transects spaced 50 m (164.0 ft) apart. No cultural resources were identified during the investigation, and the parcel was depicted as an undeveloped swamp that was drained during the latter third of the twentieth century. As a result, no further investigations of the Terrebonne Port Commission LED Site Certification Project are recommended, and TRC recommends a finding of No Historic Properties Affected.

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Acronyms and Abbreviations

Notation	Definition
CEI	Coastal Environments, Inc.
LED	Louisiana Economic Development
MAP	Mississippi Alluvial Plain
NRHP	National Register of Historic Places
Project	Terrebonne Port Commission Louisiana Economic Development Site Certification Project
RCGA	R. Christopher Goodwin and Associates, Inc.
TRC	TRC Environmental Corporation
USACE-NO	U.S. Army Corps of Engineers, New Orleans District
USGS	U.S. Geological Survey

Units of Measure

Notation	Definition
A.D.	Common Era
ac	Acre(s)
B.C.	Before Common Era
bs	Below Surface
ca.	Circa
cm	Centimeter(s)
ft	Foot(feet)
ha	Hectare(s)
in	Inch(es)
km	Kilometer(s)
m	Meter(s)
mi	Mile(s)

1.0 Introduction

This report describes the results of the Phase I cultural resources investigation of the proposed Terrebonne Port Commission Louisiana Economic Development (LED) Site Certification Project (Project) in Houma, Terrebonne Parish, Louisiana (Figures 1-1 and 1-2). TRC Environmental Corporation (TRC), on behalf of Delta Coast Consultants, LLC, conducted this archeological inventory in March of 2023. In total, approximately 13.8 hectares (ha; 34 acres [ac]) were systematically assessed for cultural resources as part of this Phase I cultural resource survey.

The Port of Terrebonne is seeking to obtain an Industrial Site Certification from LED to develop a property along Rome Woodard Court. As part of the application process for certification, the Port is completing several studies regarding utilities availability, soil conditions, and environmental conditions. This Phase I cultural resources survey was required as part of the environmetal condition assessment.

This investigation was designed to identify and evaluate all cultural resources situated within the proposed Project footprint. Such archeological resources may include archeological sites, non-site cultural resources loci, and cemeteries. This investigation followed the guidelines and procedures outlined in Louisiana's Comprehensive Archaeological Plan (Girard et al. 2022); the Louisiana Division of Archaeology's Field and Report Standards (Division of Archaeology, Office of Cultural Development, Louisiana Department of Culture, Recreation & Tourism); the National Historic Preservation Act of 1966 (as amended); the Archaeological and Historic Preservation Act of 1974; Title 36 of the Code of Federal Regulations (Parts 60-66 and 800); and, Archeology and Historic Preservation: The Secretary of the Interior's Standards and Guidelines.

1.1 Project Personnel

Mr. James Eberwine, M.S., served as Principal Investigator for the Project, while Mr. Ron Borders, B.A., and Ms. Gabrielle Chandler, B.A., conducted the fieldwork. Mr. David Stitcher, B.A., prepared the report graphics, and Ms. Janet Kreinbrink, B.A., produced this document.

1.2 Organization of the Report

Chapter 2 provides a brief description of the land use history of the area. Chapter 3 details the previous archeological research conducted within 1.6 kilometers (km; 1.0 miles [mi]) of the proposed Project and the field methodologies used to complete the investigation. The results of the investigation and specific management recommendations are provided in Chapter 4.

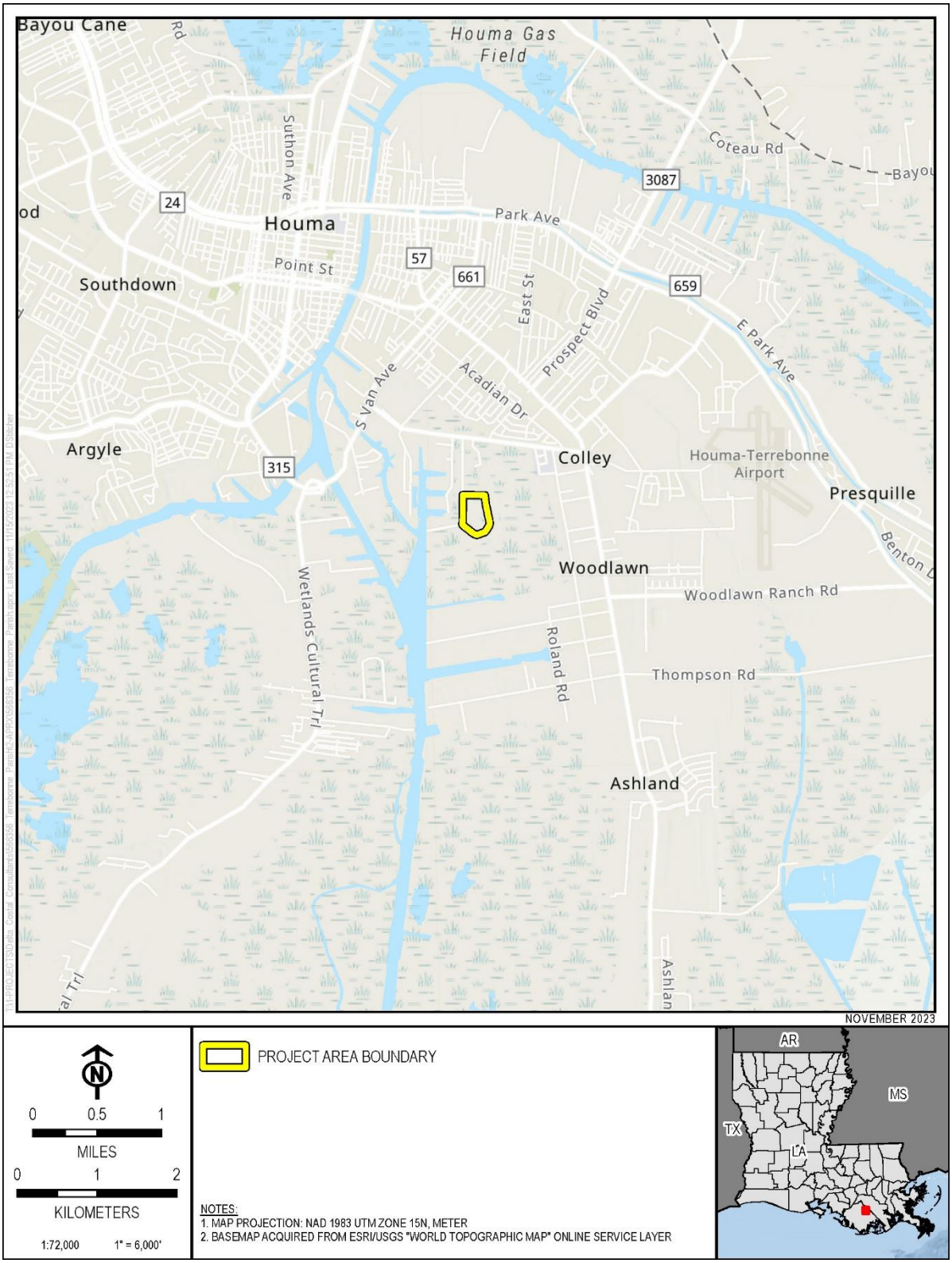

Figure 1-1. Map excerpt depicting the location of the proposed project area.

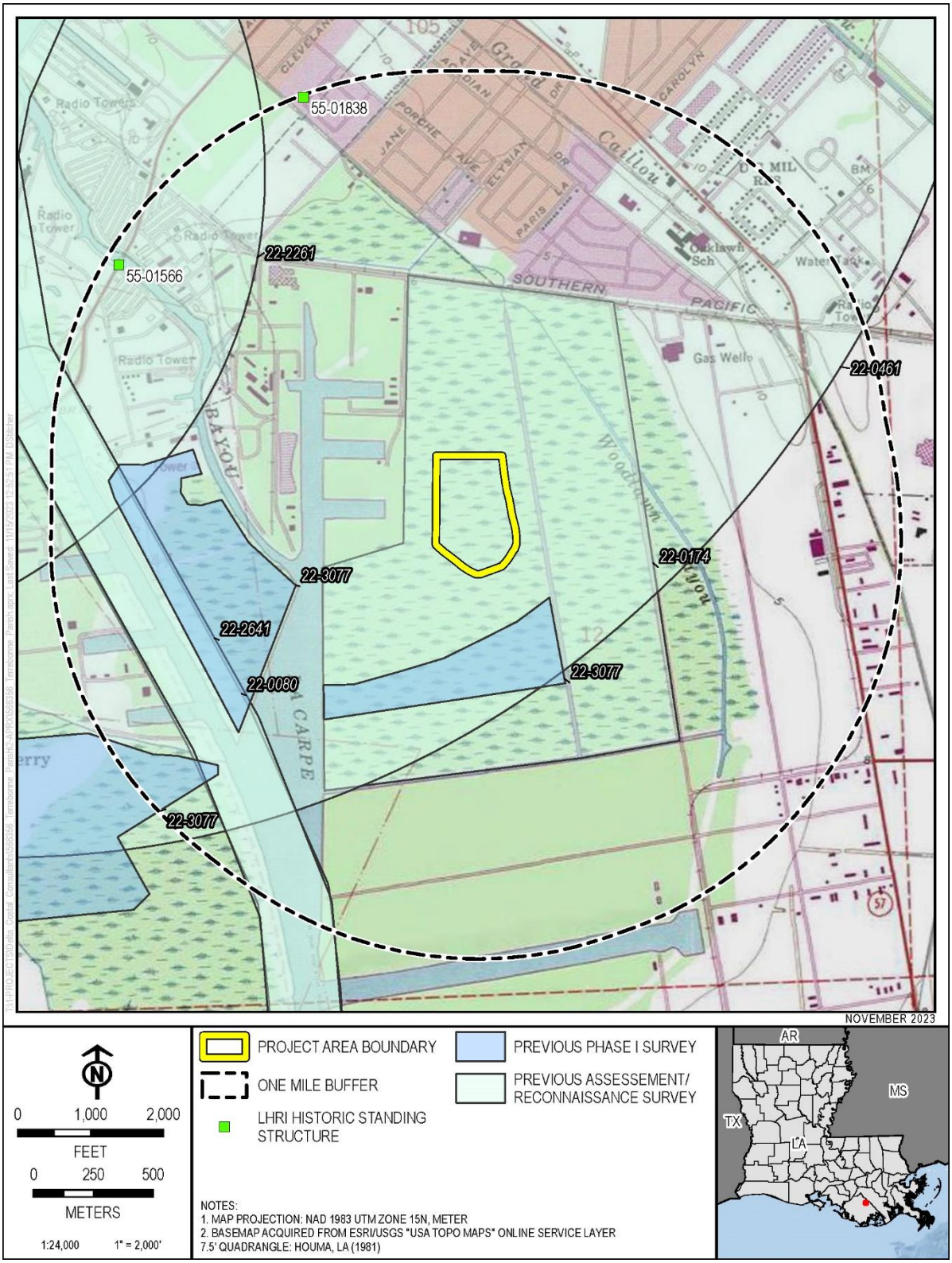

Figure 1-2. USGS quadrangle excerpt depicting the location of the proposed project area.

2.0 Environmental Settings and Land Use History

The regional landscape strongly influences the preservation and subsequent identification of any archeological materials that may have been deposited within the proposed Project vicinity. The Project area occupies the Mississippi Alluvial Plain (MAP) Section of the Coastal Plain Province Physiographic Region. The MAP extends from southern Missouri to the Gulf of Mexico, and the vicinity of the Project area includes low floodplain and delta systems formed by the Mississippi River. Soils within the MAP are alluvial in nature, having been deposited over time by the actions of the Mississippi River and its tributaries (Snead et al. 2019).

More specifically, the Project area occupies the delta plain of the Lafourche Delta Complex of the Mississippi River Delta. The Lafourche Delta Complex is the remnant of the previously active Mississippi Delta, which was created before the main course of the river switched back to the older St. Bernard Delta Complex. This ultimately left Bayou Lafourche in the old river channel as a seasonal distributary. The plain itself is a low-lying perennial wetland that supports a variety of marsh vegetation and is at particular risk for land loss as a result of subsidence and sediment deprivation (Snead et al. 2019)

Girard et al. (2022) characterize the Project vicinity as part of the Mississippi Alluvial Plain, Holocene Meander Belts ecoregion, which includes the current Mississippi River course as well as former channels and their associated alluvial landforms. They indicate that the region is generally flat, with abandoned natural levees forming the high ground. Additionally, backswamp areas are present throughout; however, many such areas have been drained for modern agriculture. Further, they point out that river channel avulsion has eroded past landforms and that subsidence threatens to submerge others.

In terms of human occupation of the ecoregion, Girard et al. (2022) indicate that archeological sites are typically found on higher, better-drained landforms such as the above-mentioned natural levees, point bars, or salt domes, the latter of which serve as stable islands in the marsh. Additionally, the movement of the river has eroded away many older archeological sites, and it has buried others below alluvial deposits. Shell middens, which were formerly common in the area, have been impacted by mining for construction and road building starting in the late 1800s. Oil and gas development, particularly the excavation of channels through the marsh, also has impacted archeological sites both directly through construction and indirectly through increased erosion.

The age of geological formation processes associated with the Atchafalaya Basin are supported by the types of previously identified archeological sites listed in Terrebonne Parish on the Louisiana Online Cultural Resources Database. Of the 355 previously recorded sites in the parish, 145 contained precontact period components, 150 contained historic components, and 53 sites possessed both precontact and historic components; five other sites had no cultural affiliation listed. The earliest known sites date from the Archaic period (ca. 8,000-500 B.C.); no Paleoindian components have been identified in Terrebonne Parish. Still, Archaic sites remain rare. Only 13 have been identified (4 percent), and all of them were classified as Middle Archaic (ca. 6,000 to 2,000 B.C.) sites.

Poverty Point Culture, which represents a transitional culture between the Late Archaic and Early Woodland Periods and originated as early as ca. 2000 B.C., was represented at two sites (<1 percent) in the parish, while unknown Woodland components were present at 45 sites (13

percent). However, as the Woodland Period progresses through time, identified components rise. For example, four sites (1 percent) possessed Tchefuncte components (500 B.C. to A.D. 100), and one Marksville/Issaquena (100 B.C. to A.D. 400) component was identified (<1 percent). Baytown components (A.D. 400 to 700) were identified at 15 sites (4 percent), and Troyville/Coles Creek components (A.D. 700 to 1,100) were present at 66 sites (19 percent). Mississippian components (A.D. 1,100 to 1,600), represented in the data set by Plaquemine and Mississippian components, were identified at 91 sites (26 percent), with 20 sites possessing both components. As would be expected, Caddo components have not been identified in Terrebonne Parish.

Likewise, historic sites become more prevalent over time. Where they could be identified, components dating from pre-1803 were identified at only one site (<1 percent). Forty-three sites (12 percent) possessed components that dated from 1803-1860, 83 had components dating from 1860-1890 (23 percent), and 163 sites had components dating from post-1890 (46 percent).

2.1 Developmental History of the Project Parcel

The earliest examined map associated with the Project area was the official 1855 Louisiana Plat map of Township 17S, Range 17E, SED-W, which depicted the parcel as undeveloped and belonging to John Talredo. The next examined map was the 1892 U.S. Geological Survey (USGS) topographic map, which depicted the entire project area in swamp. The parcel continued to be depicted as a swamp (Figure 2-1) until 1975 when a small canal appears to have been excavated to the east of the project area. The project parcel vicinity remained largely unchanged until 2015 when the current navigation channel that forms the south and east sides of the project area was excavated. Throughout the entire period, no development was depicted in the project area.

Historic aerial photographs indicate that the navigation channel was in place by at least 2004, and the small canal was in place by 1974. Again, no development was shown in the photographs, which extend back to 1962. Instead, the landform appears to have been covered by swamp historically.

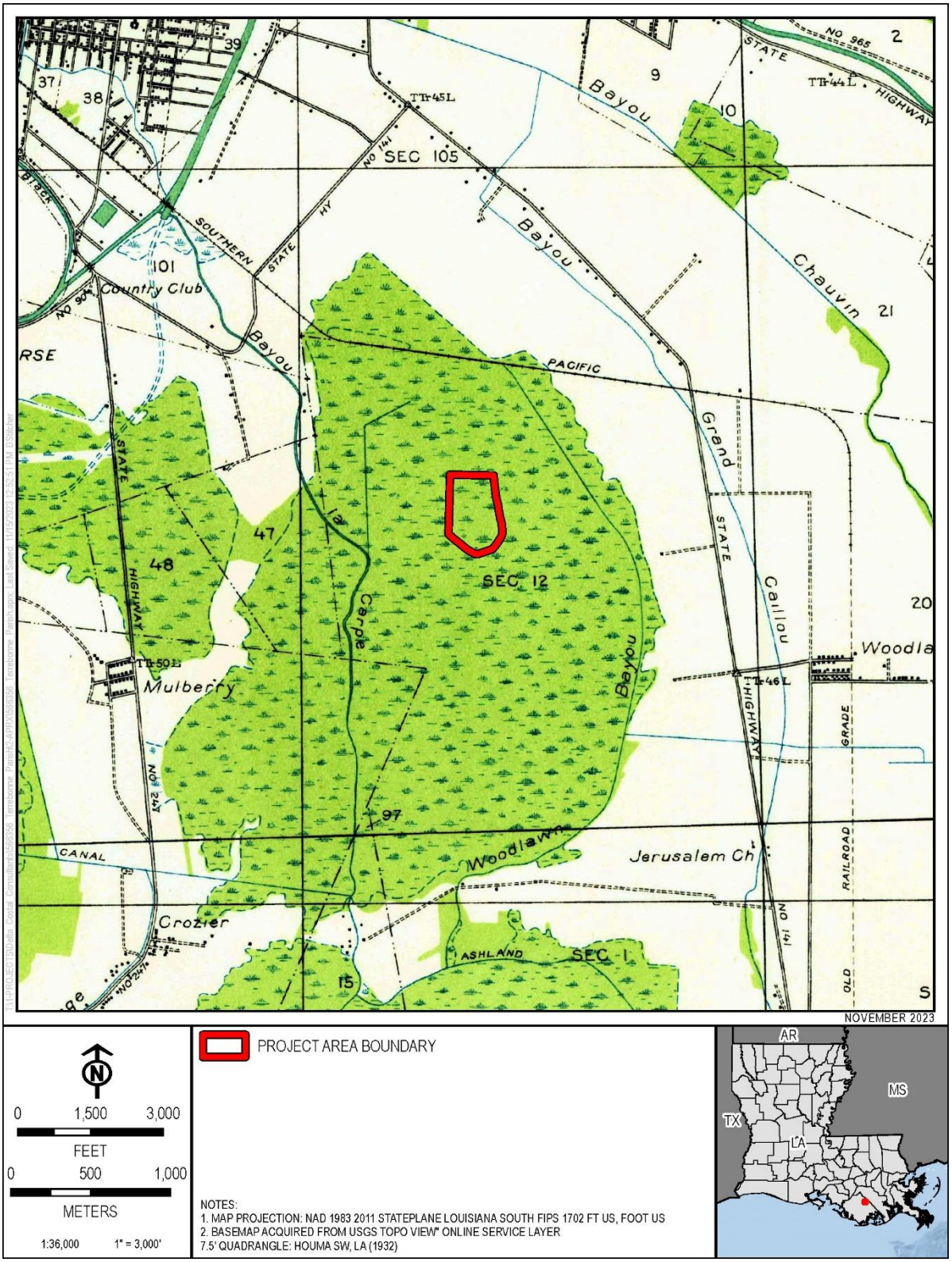

Figure 2-1. 1932 USGS quadrangle excerpt depicting the location of the proposed area.

2.2 Synthesis of Background Research

If archeological sites were to be identified in the Project parcel, it is anticipated that pre-contact sites would be associated with Late Woodland to Mississippian occupation, while historic sites would date post-1890. The examined maps and aerial photographs indicate that the property was undeveloped stretching back to 1892, and likely was undeveloped as far back as 1855. Additionally, the Project parcel does not include landforms that Girard et al. (2022) suggest would have been occupied by pre-contact peoples (e.g., natural levees, point bars, and salt domes). When combined, these data suggest that the Project parcel has a low likelihood of containing intact cultural resources.

3.0 Previous Investigations and Field Methodologies

3.1 Previous Investigations and Background Research

A review was undertaken of those previously completed cultural resources surveys, previously recorded archeological sites, built resources greater than 50 years in age, cemeteries, and properties listed in the National Register of Historic Places (NRHP) situated within 1.6 km (1.0 mi) of the proposed Project area. That review utilized the data stored electronically on the Louisiana Online Cultural Resources Map maintained by the Louisiana Divisions of Archaeology and Historic Preservation. No previously recorded archeological sites or NRHP-listed properties were identified in the study area. However, seven previously completed cultural resources surveys and two previously recorded historic standing structures were identified during the research. They are discussed in more detail below.

3.1.1 Previously Completed Cultural Resources Surveys

The earliest identified survey was conducted in 1974 by Robert Neuman of Louisiana State University (Neuman 1974). The investigation examined an unknown number of acres along the Houman Navigational Canal and bayous La Carpe, Terrebonne, Petit Caillou, and Grand Caillou. Neuman utilized windshield, boat, and helicopter surveys to identify potential cultural resources, and he identified three sites along Bayou Grand Caillou and one site along Bayou Terrebonne. The three Bayou Grand Caillou sites included one shell midden and two earthen mounds. Site 16TR86, which was identified along Bayou Terrebonne, also was an earthen mound but it had modern graves on top of it. Neuman did not assess the NRHP eligibility of the sites, nor did he make any recommendations for further work.

In 1976, Neuman investigated a proposed barge port facility (Neuman 1976). Neuman indicated that background research and field investigations were conducted, but he did not list the field methods utilized. No cultural resources were identified by his investigation, and no further work was recommended.

Neuman conducted a third study in 1977 (Neuman 1977). In this instance, he examined the proposed pump stations and force mains associated with Sewerage District 13 in Houma. A combination of background research, windshield survey, and pedestrian survey failed to identify any cultural resources. As a result, no additional investigations were recommended.

Parson Engineering Science, Inc. conducted a Phase I survey in 1998 for the Department of the Army, 90th Regional Support Command (Parsons Engineering Science, Inc. 1998). A total of 9.0 ha (22.3 ac) was examined through background research, pedestrian survey, and shovel testing. The investigation resulted in the identification of seven historic era non-site cultural resources loci, one pre-contact non-site cultural resources loci, and one newly recorded archeological site, Site 16LY96. The nineteenth-century site was recommended as not eligible for listing in the NRHP, and no further work was recommended.

R. Christopher Goodwin and Associates, Inc. (RCGA) conducted a land use history of several channel improvements on behalf of the U.S. Army Corps of Engineers, New Orleans District (USACE-NO) in 1999 (Draughon, Jr. et al. 1999). The survey examined several waterways that flowed along approximately 294.5 km (183 mi) of the Lower Atchafalaya Basin and extended through eight Louisiana parishes. As the effort was a land use study, no field investigations

were conducted. However, RCGA made suggestions on the potential for cultural resources and hazardous, toxic, and radioactive waste in the various study areas.

In 2005, Coastal Environments, Inc. (CEI) conducted a cultural resources records review and developed a research design for the then-proposed deepening of the Houma Navigation Canal (Ryan et al. 2005). The project was conducted on behalf of the USACE-NO which was considering deepening the channel from 4.5 meters ([m]; 15 feet [ft]) to 5.5 to 6.1 m (18 to 20 ft). Background research identified three previously recorded archeological sites and 13 sunk or salvaged vessels in the study area. Management recommendations for those 16 resources were presented in the research design developed for the project.

CEI continued their work on the Houma Navigation Canal in 2008 when they completed a Phase I investigation for areas that were to be affected by the deepening project (Kelley et al. 2008). As was the case above, the project was sponsored by the USACE-NO, and it examined approximately 11,634.3 ha (28,749 ac) across the canal, navigation channel, Bayou Grand Caillou, and dredge material disposal areas. All investigations were limited to the waterways, and remote sensing identified 11 anomalies, of which two were considered to be potential cultural resources. Both resources were identified in the Bayou Grand Caillou area, and CEI also suggested that the area along the western bank of the bayou below Mound Bayou should be considered to be a sensitive area as Fort Quitman, a Civil War-era earthwork, was located in that vicinity. As a result, the USACE-NO dropped the proposed Bayou Grand Caillou improvements from the project, and no further work was recommended.

3.1.2 Previously Recorded Historic Standing Structures

Structure 55-01838 was identified in 2021 and addressed at 324 Troy Street in Houma, Louisiana. The single story ranch residence was constructed in 1973 and clad in multi-colored brick vaneer. The house sits on a slab foundation and is covered by an asphalt shingle roof. A carport once sat at the northeastern end of the building, but it was enclosed in vinyl siding ca. 2000. The building was recommended as not eligibile for listing in the NRHP.

Structure 55-01566 was an historic bridge that spans Bayou Lacarpe approxiately 0.8 km (0.5 mi) north of LA 315. The bridge was classified as a steel vertical lift span that build in 1964. The single-span bridge measures approximately 59.7 m (196 ft) in length, and the maximum span length is 23.2 m (76 ft). The bridge was determined to be eligible for the NRHP under Criterion C for its design. The bridge is uncommon nationally and has significance as a movable bridge with the vertical lift variation. The bridge was determined eligible for listing in the NRHP in 2013.

3.2 Field Methodologies

This Phase I cultural resources inventory was designed to identify any cultural resources located within the proposed Project area. Field methodologies were limited to pedestrian survey augmented by systematic shovel testing at 50 m (164 ft) intervals along 10 parallel survey transects spaced 50 m (164 ft) apart. All shovel tests measured at least 30 centimeters ([cm]; 12 inches [in]) in diameter and they were excavated to a depth of at least 30 cm (11.8 in) below surface (bs), to impenetrable soils, or to sterile subsoil. Shovel tests were excavated in 10 cm (4 in) arbitrary levels within natural strata, and the excavated soils were screened through 0.64 cm (0.25 in) hardware mesh. All excavated tests were backfilled immediately upon completion of the excavation. Non-excavated shovel tests were located either in a built-up shell driveway,

manmade pond, or in the front of the house, where the landowner specifically requested that shovel tests not be excavated.

3.2.1 Site Recordation and Delineation

No cultural resources were identified. Thus, no site delineation was required.

3.3 Architectural Field Methods

As a part of this Phase I cultural resources investigation, all visible historic standing structures, cemeteries, or engineering structures located within or immediately adjacent to the proposed Project areas that appear to have been built at least 50 years ago were examined at the reconnaissance level. However, no such structures were identified.

3.4 Curation

After the final report has been accepted, all drawings; maps; photographs; and, field notes will be curated with the Louisiana Division of Archaeology, 1835 North River Road, Baton Rouge, LA 70802.

4.0 Results and Recommendations

This chapter describes the results of Phase I cultural resources investigation of the proposed Project in Terrebonne Parish, Louisiana. The Project area was roughly rectangular in shape and it encompassed approximately 13.8 ha (34 ac; Figure 4-1). A manmade canal bounded the property to the east and south, while Rome Woodard Street formed the western boundary of the property; existing development bounded the property to the north. The nearly level property was in manicured lawn in a lowland setting (Figure 4-2).

A total of 59 shovel tests were excavated at 50-m (164.0-ft) intervals along 10 survey transects spaced 50 m (164.0 ft) apart. A typical shovel test profile exhibited two strata in profile and extended to a depth of 50 cmbs (19.7 inbs). Stratum I was a deposit of brown (10YR 4/3) clay that extended to an average depth of 30 cmbs (11.8 inbs). Below that was a deposit of gray (10YR 6/1) clay with ferrous staining that continued to the base of excavations. Shovel test profiles are presented in Table 4-1.

No cultural resources were identified during the investigation. As detailed in the previous chapters, the parcel was depicted as an undeveloped swamp that was drained during the latter third of the twentieth century. As a result, no further investigations of the Project are recommended, and TRC recommends a finding of No Historic Properties Affected.

Table 4-1. Excavated Shovel Test Profiles

Transect	Shovel Test	Meterage (m)	Stratum	Beginning Elevation (cmbs)	Closing Elevation (cmbs)	Description	Texture
1	1	0	I	0	20	Dark gray (10YR 4/1)	Clay
			II	20	50	Yellowish brown (10YR 5/4)	Sandy clay
1	2	50	I	0	30	Dark gray (10YR 4/1)	Clay
			II	30	40	Yellowish brown (10YR 5/4)	Sandy clay
1	3	100	I	0	35	Dark gray (10YR 4/1)	Clay
			II	35	45	Yellowish brown (10YR 5/4)	Sandy clay
1	4	150	I	0	50	Dary gray (10YR 4/1) mottled with dark brown (10YR 3/3)	Clay
1	5	200	I	0	50	Dark gray (10YR 4/1)	Clay
1	6	250	I	0	5	Very dark brown (10YR 2/2)	Sand
			II	5	40	Yellowish brown (10YR 5/4)	Clay
2	1	0	I	0	30	Dark grayish brown (10YR 4/2)	Clay
			II	30	40	Very dark grayish brown (10YR 3/2)	Clay
			III	40	50	Gray (10YR 5/1)	Clay

Transect	Shovel Test	Meterage (m)	Stratum	Beginning Elevation (cmbs)	Closing Elevation (cmbs)	Description	Texture
2	2	50	I	0	30	Dark grayish brown (10YR 4/2)	Clay
			II	30	40	Very dark grayish brown (10YR 3/2)	Clay
			III	40	50	Gray (10YR 5/1)	Clay
2	3	100	I	0	20	Dark grayish brown (10YR 4/2)	Clay
			II	20	25	Very dark grayish brown (10YR 3/2)	Clay
			III	25	30	Gray (10YR 5/1)	Clay
2	4	150	I	0	30	Dark grayish brown (10YR 4/2)	Clay
			II	30	40	Very dark grayish brown (10YR 3/2)	Clay
			III	40	50	Gray (10YR 5/1)	Clay
2	5	200	I	0	5	Very dark grayish brown (10YR 3/2)	Clay
			II	5	35	Brown (10YR 5/3)	Clay
			III	35	50	Gray (10YR 5/1)	Clay
2	6	250	I	0	40	Brown (10YR 4/3)	Clay
			II	40	50	Gray (10YR 5/1)	Clay
3	1	0	I	0	25	Dark gray (10YR 4/1)	Clay
			II	25	35	Yellowish brown (10YR 5/4)	Sandy clay
3	2	50	I	0	35	Dark gray (10YR 4/1)	Clay
			II	35	45	Yellowish brown (10YR 5/4)	Sandy clay
3	3	100	I	0	50	Dark gray (10YR 4/1)	Clay
3	4	150	I	0	50	Dark gray (10YR 4/1)	Clay
3	5	200	I	0	50	Dark gray (10YR 4/1)	Clay
3	6	250	I	0	50	Dark gray (10YR 4/1)	Clay
3	7	300	I	0	50	Dark gray (10YR 4/1)	Clay
4	1	0	I	0	30	Very dark grayish brown (10YR 3/2)	Clay
			II	30	40	Brown (10YR 4/3)	Clay
			III	40	50	Gray (10YR 6/1) with ferrous staining	Clay
4	2	50	I	0	30	Very dark grayish brown (10YR 3/2)	Clay
			II	30	40	Brown (10YR 4/3)	Clay
			III	40	50	Gray (10YR 6/1)	Clay

Transect	Shovel Test	Meterage (m)	Stratum	Beginning Elevation (cmbs)	Closing Elevation (cmbs)	Description	Texture
4	3	100	I	0	30	Very dark grayish brown (10YR 3/2)	Clay
			II	30	40	Brown (10YR 4/3)	Clay
			III	40	50	Gray (10YR 6/1) mottled with yellowish red (5YR 5/6)	Clay
4	4	150	I	0	35	Dark grayish brown (10YR 4/2)	Clay
			II	35	50	Black (10YR 2/1) mottled with gray (10YR 5/1)	Clay
4	5	200	I	0	30	Very dark grayish brown (10YR 3/2)	Clay
			II	30	35	Brown (10YR 4/3)	Clay
			III	35	40	Gray (10YR 6/1)	Clay
4	6	250	I	0	30	Brown (10YR 4/3)	Clay
			II	30	50	Gray (10YR 5/1)	Clay
5	1	0	I	0	20	Dark gray (10YR 4/1)	Clay
			II	20	30	Yellowish brown (10YR 5/4)	Clay
5	2	50	I	0	40	Dark gray (10YR 4/1)	Clay
			II	40	50	Yellowish brown (10YR 5/4)	Clay
5	3	100	I	0	50	Dark gray (10YR 4/1) mottled with yellowish brown (10YR 5/4)	Clay
5	4	150	I	0	50	Dark gray (10YR 4/1)	Clay
5	5	200	I	0	50	Dark gray (10YR 4/1)	Clay
5	6	250	I	0	50	Dark gray (10YR 4/1)	Clay
5	7	300	I	0	50	Dark gray (10YR 4/1)	Clay
6	1	0	I	0	30	Very dark grayish brown (10YR 3/2)	Clay
			II	30	40	Brown (10YR 4/3)	Clay
			III	40	50	Very pale brown (10YR 7/3)	Clay
6	2	50	I	0	30	Very dark grayish brown (10YR 3/2)	Clay
			II	30	40	Brown (10YR 4/3)	Clay
			III	40	50	Gray (10YR 6/1)	Clay
6	3	100	I	0	30	Brown (10YR 4/3)	Clay
			II	30	40	Gray (10YR 5/1)	Clay

Transect	Shovel Test	Meterage (m)	Stratum	Beginning Elevation (cmbs)	Closing Elevation (cmbs)	Description	Texture
6	4	150	I	0	30	Brown (10YR 4/3)	Clay
			II	30	40	Gray (10YR 5/1)	Clay
6	5	200	I	0	30	Brown (10YR 4/3)	Clay
			II	30	40	Gray (10YR 5/1)	Clay
6	6	250	I	0	30	Brown (10YR 4/3)	Clay
			II	30	40	Gray (10YR 5/1)	Clay
6	7	300	I	0	30	Grayish brown (10YR 5/2)	Clay
			II	30	35	Dark brown (10YR 3/3)	Clay
			III	35	40	Dark gray (10YR 4/1)	Clay
7	1	0	I	0	15	Yellowish brown (10YR 5/4)	Clay
			II	15	50	Gray (10YR 5/1)	Sandy clay
7	2	50	I	0	15	Yellowish brown (10YR 5/4)	Clay
			II	15	50	Gray (10YR 5/1)	Sandy clay
7	3	100	I	0	50	Dark gray (10YR 4/1)	Clay
7	4	150	I	0	50	Dark gray (10YR 4/1)	Clay
7	5	200	I	0	50	Dark gray (10YR 4/1)	Clay
7	6	250	I	0	50	Dark gray (10YR 4/1)	Clay
7	7	300	I	0	50	Dark gray (10YR 4/1) mottled with yellowish brown (10YR 5/4)	Clay
8	1	0	I	0	30	Brown (10YR 4/3)	Clay
			II	30	35	Yellowish brown (10YR 5/4)	Clay
			III	35	40	Very pale brown (10YR 7/3)	Clay
8	2	50	I	0	30	Brown (10YR 4/3)	Clay
			II	30	35	Very dark grayish brown (10YR 3/2)	Clay
			III	35	40	Gray (10YR 5/1)	Clay
8	3	100	I	0	30	Brown (10YR 4/3)	Clay
			II	30	35	Very dark grayish brown (10YR 3/2)	Clay
			III	35	40	Gray (10YR 5/1)	Clay
8	4	150	I	0	30	Brown (10YR 4/3)	Clay

Transect	Shovel Test	Meterage (m)	Stratum	Beginning Elevation (cmbs)	Closing Elevation (cmbs)	Description	Texture
			II	30	35	Very dark grayish brown (10YR 3/2)	Clay
			III	35	40	Gray (10YR 5/1)	Clay
8	5	200	I	0	30	Brown (10YR 4/3)	Clay
			II	30	35	Very dark grayish brown (10YR 3/2)	Clay
			III	35	40	Gray (10YR 5/1)	Clay
8	6	250	I	0	30	Brown (10YR 4/3)	Clay
			II	30	35	Very dark grayish brown (10YR 3/2)	Clay
			III	35	40	Gray (10YR 5/1)	Clay
8	7	300	I	0	30	Brown (10YR 4/3)	Clay
			II	30	35	Very dark grayish brown (10YR 3/2)	Clay
			III	35	40	Gray (10YR 5/1)	Clay
9	1	0	I	0	5	Very dark brown (10YR 2/2)	Sand loam
			II	5	30	Grayish brown (10YR 5/2)	Sandy clay
9	2	50	I	0	30	Dark grayish brown (10YR 4/2)	Clay
			II	30	40	Very dark grayish brown (10YR 3/2)	Clay
9	3	100	I	0	50	Dark gray (10YR 4/1)	Clay
9	4	150	I	0	50	Dark gray (10YR 4/1)	Clay
9	5	200	I	0	50	Dark gray (10YR 4/1)	Clay
10	1	0	1	0	30	Brown (10YR 4/3) mottled with very pale brown (10YR 7/3) with gravel and shell	Silty clay
10	2	50	I	0	10	Very dark brown (10YR 2/2)	Silty clay
						* Terminated at 10 cmbs due to concrete	

Figure 4-1. Aerial photograph depicting the project parcel and location of excavated shovel tests.

Figure 4-2. Overview photograph of the project parcel facing north.

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